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DIVISION OF FORESTRY.

FOREST AND ORNAMENTAL TREE SEED AND SEEDLINGS FOR SALE AT THE GOVERNMENT NURSERY.

The Division of Forestry keeps constantly on hand at the Government Nursery, seed and seedlings of the important native and introduced trees. These are still at prices just covering the cost of collection or growing.

The list includes both forest and ornamental trees, such as Silk Oak, Koa, various species of Eucalyptus, Golden and Pink Showers, Pride of India, Poinciana, Alizzia, etc. The price of the seed varies from 10 to 50 cents per ounce. The seedlings may be had for 2½ cents each, except a few kinds which are 5 cents. Seed of the various palms is also for sale; the price per 100 varying from \$1.00 to \$2.50. All seed is tested before being sent out, which insures its being good.

All communications in regard to seed or trees should be addressed to David Haugas, Forest Nurseryman, Box 207, Honolulu, Hawaii.

C. S. JUDD,
Superintendent of Forestry.

DIVISION OF ENTOMOLOGY.

To give information about insects free of charge is one of the duties of this Division, and Hawaiian readers are hereby invited to make inquiry in person and by mail. In order to be able to advise intelligently or send the right kind of useful insects for relief, we like and sometimes it is indispensable for us to see the insects suspected or caught in the act, also specimens of the injury. In a tin with a hole or two, or a wooden box specimens may be mailed by parcels post. When specimens are not accompanied by letter always write your name and address in the upper left-hand corner of the package. Address all communications **SUPERINTENDENT DIVISION OF ENTOMOLOGY, P. O. BOX 207, HONOLULU, HAWAII.**

EDW. M. EHRLHORN,
Superintendent of Entomology.

THE HAWAIIAN FORESTER AGRICULTURIST

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The Wood Waste Exchange of the federal department of agriculture appears to be an exceedingly important economic factor. Perhaps the workshops here using the beautiful Hawaiian hardwoods might make something out of it, therefore a press notice of the institution is elsewhere printed.

In his report for July the Territorial veterinarian explains an error in his July report, which did some injustice to both Moku-leia ranch and Pond's dairy.

Dr. Nörsgaard, in reference to hog cholera, repeats in his report for June the advice of former reports with regard to feeding and sanitation as the best preventives of disease in herds of swine.

Results of the initial campaign against bovine tuberculosis on Hawaii, "the big island," are highly encouraging.

It is to be hoped that the efforts of the Territorial veterinarian to procure a visit to the Territory by the chief of the Bureau of Animal Industry, Washington, D. C., will be successful. Dr. Nörsgaard's attendance at the national convention of veterinarians in Oakland this month, which has been arranged for, will do much to put Hawaii on the animal industry map of the Union as well as bring valuable returns to these islands.

Three pests were nabbed by Entomologist Ehrhorn in June, outside of various lots of contraband plants which he had either destroyed or returned. It would seem that there is no end to the ignorance, prevailing in foreign parts, of United States regulations forbidding the entrance of fruit and vegetable stuff in baggage and mails.

The new edition of Mr. Rock's book on Hawaiian forests will be awaited with keen interest here and abroad.

Results of fencing the Territorial forest reserves have been so obviously profitable that expenditures on that account must be regarded as among the soundest of investments.

That profit from forest culture is not, in these islands, a matter of legacy to future generations, but something to be enjoyed in the lifetime of the tree planter, is made evident in the article by the Superintendent of Forestry, Mr. Judd, in this number, giving the results from an ironwood grove on Kauai.

More than 10,000 plants distributed in May and June to the general public, with nearly 13,000 to plantation and other companies, by the Government nursery is "going some," but when on top of these numbers the nurseryman engages to deliver 50,000 seedlings between the middle of July and the end of August, to such corporations, a faint idea of what is doing in forestation in these islands may be gained.

Much work in June is reported by the Superintendent of Hydrography, whose division not only measures the water resources of the islands but aids in solving the water problems of plantations, municipalities and the national military establishment in the Territory.

All interested in the fruit industries of Hawaii—which must include everybody—will wish good luck to Mr. Fullaway in his search for a melon fly parasite in India.

GOOD IRONWOOD YIELD.

The following data concerning the yield of timber from a planted grove at Lihue, Kauai, may be of interest to those readers of the Forester who are engaged in tree planting:

Ironwood trees of the species known as *Casuarina quadrivalvis* were cut in April, 1915, on a plot of land a little over half an acre in area near the Lihue church, Lihue, Kauai. These had been planted in 1896 and up to the time of the final cut the plot had been thinned out several times. The cut from this plot of .6 acre was 226 trees which yielded 39 cords of firewood. At this rate the yield in wood for this species in this locality should be 65 cords per acre at the end of 19 years, which represents a growth of 3.42 cords per acre per annum. This is a better showing than available records of the yield in woodlots of blue gum, *eucalyptus globulus*, in these islands.

The wood of this ironwood is excellent for fuel and it is used extensively for this purpose in Lihue, where it now sells for \$8 per cord, delivered. The tops and branches even down to one inch in diameter, as well as the main trunk, are sold and used.

C. S. JUDD, Superintendent of Forestry.

BOARD MEETING ITEMS.

Following are items of public interest from the approved minutes of the Board of Commissioners of Agriculture and Forestry, being of a meeting held at the office of Commissioner Dowsett on July 15, at which were present Albert Waterhouse, president; H. M. von Holt and A. H. Rice, members; C. S. Judd, Executive Officer, and E. M. Ehrhorn, Superintendent of Entomology.

IMPORTATION OF FORMOSA CROW.

Mr. Muir's application of May 25 in which he requested permission to import into the Territory for liberation the Formosa crow, a bird which he considers will be beneficial, was again presented for action. The Superintendent of Entomology, upon question of the chairman, stated that he had gone into the matter to considerable extent and from all information gathered he was of the opinion that there was absolutely no danger in introducing it into the Territory. The question arose as to whether or not the bird is of a carnivorous nature and if the disease known as surra exists in Formosa. After some discussion it was thought advisable to confer with the Superintendent of Animal Industry in this regard before taking definite action. It was thereupon moved by Commissioner Rice, seconded by Commissioner von Holt and unanimously carried that Mr. Muir's application be granted subject to the approval of the Superintendent of Animal Industry.

CLAIMS FOR FIGHTING FOREST FIRE.

Chairman Waterhouse called to the attention of those present two bills dated March, 1915, which he had received from the Hilo Sugar Company, \$91.35, and from the Hawaii Mill Company, \$210.45, for labor in fighting a forest fire on the Punohoa mauka land near Hilo. After a short discussion and the Superintendent of Forestry advising that the Attorney General recommended that same be paid in accordance with Section 492 of the Revised Laws of 1915, it was moved by Commissioner von Holt, seconded by Commissioner Rice and unanimously carried, that same be approved and sent to the Auditor for payment.

APPLICATION W. F. BARTELS.

Regarding the application of W. F. Bartels dated June 7, 1915, for permission to use for agricultural purposes a parcel of land consisting of forty acres together with an allowance of pasture land within the South Kona forest reserve, Hawaii, after a short discussion and those present concurring that it would be inconsistent with the general forest reserve policy, it was unanimous-

ly voted upon motion of Commissioner von Holt, seconded by Commissioner Rice, that same be not granted, and Mr. Bartels to be so advised.

RE DAIRY LIVESTOCK INSPECTOR.

Regarding the deferred action of the Commissioners as to the reappointment of Mr. Joseph Richards in the Division of Animal Industry, the chairman read a letter from the Superintendent of that Division dated July 15, 1915, recommending that he be reappointed dairy livestock inspector at such salary as the Commissioners see fit to allow; the City and County, he advised, had appointed Mr. Richards dairy stock inspector and had appropriated the sum of \$50 per month for transportation in carrying on the work, said appointment to take effect July 16, 1915. He also advised that the Superintendent of Animal Industry had suggested that Mr. Richards be allowed a salary of \$100 per month and an extra allowance of \$25 per month for the upkeep of a horse and rig, thus allowing \$25 per month for the upkeep of the automobile on tuberculosis control work; it was thought the work could be accomplished more satisfactorily if separate transportation were provided. It was thereupon moved by Commissioner von Holt, seconded by Commissioner Rice, that beginning July 16, 1915, Mr. Richards be appointed as dairy livestock inspector of the Board at a salary of \$100 per month and an arrangement made whereby the extra allowance of \$25 per month for transportation will be made. Upon vote same was unanimously carried.

LETTER TO MAYOR LANE.

The chairman read the draft of a letter dated July, 1915, addressed to Mayor John C. Lane regarding the milk supply of the City and County of Honolulu, and advising that the Board will be glad to coöperate in every way possible with the Board of Supervisors to better conditions. Upon motion of Commissioner von Holt, seconded by Commissioner Rice, the letter as read was accepted.

RE RULE VIII, DIVISION OF ANIMAL INDUSTRY.

Chairman Waterhouse read the draft of a proposed rule of the Division of Animal Industry regarding the importation into the Territory of virus for the treatment of hog cholera. Those present concurred that said rule be submitted to the Attorney General in regard to form as well as to the legality of taking such action. Same was made a motion by Commissioner von Holt, seconded by Commissioner Rice and unanimously carried.

A communication from P. M. Pond dated July 12, 1915, re-

garding the hog cholera situation on the Island of Oahu, was presented by the chairman, Mr. Pond requesting the Board to import into the Territory virus for hog cholera treatment or draft regulations whereby it may be imported. The draft of a letter to Mr. Pond, dated July 15, was also read in which it was advised that before definite action is taken in regard to the serum simultaneous method of vaccination the Board desires to look further into the matter, and would await the results of the annual meeting of the American Veterinary Medical Association which convenes in Oakland, California, from August 30 to September 3, inclusive, at which time the subject of hog cholera and its treatment will be thoroughly discussed. Upon vote the letter as read was accepted.

RE LEAVE OF ABSENCE DR. NORGAARD.

A request dated July 15 was presented from the Superintendent of Animal Industry that he be delegated by the Board to attend the annual meeting of the American Veterinary Medical Association, also requesting the sum of \$250 for expenses. After a short discussion and those present concurring it was moved, seconded and unanimously carried that Dr. Norgaard be delegated to attend the Association meeting and that he be allowed a leave of absence of six weeks from August 17 as well as the sum of \$250 to cover expenses.

RE INCREASE IN SALARY, DAVID HAUGHS.

The Executive Officer called the attention of those present to an item in the budget for the biennial period ending June 30, 1917, allowing an increase in the salary of the Government Nurseryman of \$25 per month. Mr. Judd stated that Mr. Haughs had worked faithfully for the Board for the past several years and recommended that the increase be allowed. Upon vote the recommendation was unanimously carried.

RE LETTER OF CREDIT D. T. FULLAWAY.

Upon motion of Commissioner Rice, seconded by Commissioner von Holt and unanimously carried, the Executive Officer was authorized to arrange for a letter of credit for \$1500 in order to supply D. T. Fullaway with funds on his forthcoming trip to India in search of a parasite on the melon fly (*Dacus cucurbitae*). The Executive Officer advised that Mr. Fullaway was leaving on the 23rd inst.

DIVISION OF ANIMAL INDUSTRY.

Honolulu, June 30, 1915.

Board of Commissioners of Agriculture and Forestry.

Gentlemen:—I beg to submit herewith a report on the work of the Division of Animal Industry for the month of June, 1915:

BOVINE TUBERCULOSIS.

In last month's report a mistake occurred in that Mr. Pond's dairy farm at Mokuleia was referred to as the Mokuleia ranch. As the latter belongs to the Oahu Railway & Land Company and as five cases of tuberculosis were reported to have occurred there it is but just to state that the cases in question occurred in the Pond dairy and not on the Mokuleia ranch. In justice to the dairy, however, it should be added that the same has been free of tuberculosis for a long time and that the cases in question resulted from an unfortunate mistake in introducing new stock which erroneously was supposed to have been tested by this office. The reacting animals were removed from the premises at once. With the exception of a few family cows no tuberculin testing was done during the month of June.

HOG CHOLERA.

The two outbreaks of hog cholera which occurred during May were brought well under control by means of the serum treatment and so far as is known the disease remained confined to these two herds. An effort is now being made to ascertain what truth there may be in certain rumors to the effect that the disease has occurred in various other localities on Oahu. This, however, is no easy matter owing to the reluctance on the part of many owners, especially among the Orientals, to admit losses of live stock or the presence of disease among them. When to this is added that the symptoms of swill poisoning often resemble those of hog cholera sufficiently to puzzle the veterinarian, and with immense quantities of swill being fed on Oahu, it becomes exceedingly difficult to gain any definite information beyond the fact that wherever swill is fed losses will occur, the extent of which cannot always be said to have any direct relation to care and sanitation, but which probably can be controlled in most cases by varying the swill diet with other feeds and good pasturage. Hog raising on a large scale has been an unknown industry here until quite recently and has to a great extent been in the hands of the Oriental population. In other countries it has long been realized that while there are large profits and quick returns there are also exceedingly great risks in bringing together large numbers of hogs, and that these risks are multiplied

when swill constitutes the main feed. So far as I have been able to ascertain no hog cholera or any other disease of an endemic nature has occurred here among hogs fed in a rational way, that is, corn or other grain, roots and field crops, especially alfalfa, and when kept under sanitary conditions with access to pasture and plenty of fresh water. On the Parker ranch for instance hundreds of hogs are raised annually without losses worth mentioning. To assume that any form of serum or other treatment can take the place of sanitation and experience or can balance a one-sided ration is fallacious, but where losses are due to infection from disease-producing bacteria much can undoubtedly be gained by judicious treatment. Nor can it be gainsaid that hog raising methods have been revolutionized on the mainland of the United States since the general use of anti-hog cholera serum has so effectively reduced the animal losses from this disease and given an impetus to hog raising never known before.

VETERINARY CONVENTION IN OAKLAND, CAL.

The success of this new treatment is due almost exclusively to scientists of the federal Bureau of Animal Industry and to the state livestock sanitary officials as well as the practicing veterinarians of the United States. It is estimated that nearly one thousand of these official and private veterinarians will meet in Oakland, California, the latter part of August this year, for the purpose of exchanging ideas and experience relative to the control and suppression of infectious and contagious diseases among live stock, and with a view to the ultimate eradication of such scourges as bovine tuberculosis, hog cholera, rabies, Texas fever and foot and mouth disease. The value of such an opportunity to exchange ideas and come in direct communication with men of great experience on the subjects which are confronting us here in Hawaii cannot be overestimated, and the writer takes the opportunity herewith to thank the Board for delegating him to attend the 53rd annual convention of the American Veterinary Medical Association in Oakland next month.

While the hog cholera serum which has been used here up to the present time may have been everything that could be expected, an opportunity will also be afforded at this meeting to learn which of the more than ninety authorized manufacturers produce the most reliable serum. More than \$60,000 worth of spurious or inferior serum has been confiscated by federal inspectors, and it is not impossible that the quantity which reached Hawaii has not all been of the best. Some of it at least has been decidedly foul smelling when opened and much of it has contained so much sediment as to make it difficult of administration. It may be taken for granted that every manufacturer of serum will have an exhibit at or near the convention hall and that unpreju-

diced opinions as to their relative values may be obtained from friends and colleagues among the federal and state officials present.

Uniform rules and regulations for the inspection and testing of live stock in interstate traffic as well as for methods of dealing with outbreaks of infectious diseases in general and with bovine tuberculosis in special are among the other subjects of interest to this Territory which will come up for discussion.

An effort to induce the chief of the Bureau of Animal Industry or one of his divisional chiefs to visit this Territory in person, and preferably as soon as the Oakland convention has adjourned, is already under way and will, if successful, be of value to the various branches of the local live stock industry not alone on account of the expert advice and suggestions he may be able to offer, but also in imparting to an influential federal official an opportunity for personal observations on live stock conditions in this isolated island possession of the United States and its ability to care for itself under possible future world complications.

TRANSPORTATION OF LIVE STOCK.

The following live stock arrived at the port of Honolulu during the month of June:

June 1—S. S. Lurline: 9 horses, 20 mules, 22 cattle, 1 hog, 19 crates poultry.

June 8—S. S. Wilhelmina: 22 crates poultry.

June 15—S. S. Manoa: 9 hogs, 18 crates poultry.

June 22—S. S. Matsonia: 3 dogs, 31 crates poultry..

June 25—S. S. Makura: 1 dog.

June 28—S. S. Sierra: 36 crates poultry.

June 29—S. S. Lurline: 6 crates poultry.

From the island of Hawaii the Assistant Territorial Veterinarian reports having tested 158 head of cattle belonging to 51 owners. Of this number two stables were found infected with respectively three and two reactors.. This condition must be said to be highly favorable to the speedy eradication of tuberculosis on the big island.

No cases of hog cholera have come to notice during the past three months on either Hawaii or Maui.

Respectfully submitted,

VICTOR A. NORGAARD,
Territorial Veterinarian.

DIVISION OF ENTOMOLOGY.

Honolulu, June 30, 1915.

Board of Commissioners of Agriculture and Forestry.

Gentlemen:—I respectfully submit my report of the work performed by the Division of Entomology for the month of June, 1915, as follows:

During the month 59 vessels arrived at the port of Honolulu of which 24 carried vegetable matter and two vessels carried moulding sand. Of these vessels eight came via the Panama Canal.

<i>Disposal.</i>	<i>Lots.</i>	<i>Parcels.</i>
Passed as free from pests.....	1,122	18,864
Fumigated	2	2
Burned	38	38
Returned	1	1
Total inspected.....	1,163	18,905

Of these shipments 18,674 packages arrived as freight, 103 packages as mail matter and 128 packages as baggage of passengers and immigrants.

RICE AND BEAN SHIPMENTS.

During the month 24,977 bags of Japanese rice, 76 bags of Chinese rice, 1996 bags of Japanese beans and 193 bags of sorghum seed arrived, and after a thorough inspection were found free from rice, bean and grain pests and all shipments were allowed to be delivered.

PESTS INTERCEPTED.

Nineteen packages of fruit and seven packages of vegetables, also six packages of plants, were taken from the baggage of passengers and immigrants from foreign countries and destroyed by burning. The plants were destroyed under the rules of the Federal Horticultural Board on account of not having the required permits of entry. A package of beans from Spain was found infested with the common bean weevil and was fumigated before delivery. A package of algaroba beans from Manila was infested with the larvae of some weevil, and was fumigated before delivery. A juniper plant was taken from its container and all soil removed and after replanting same in sterilized soil was allowed to pass. One package of hibiscus cuttings from the Philippines was intercepted at the postoffice and was returned to the shipper as unmailable under the rules of the Federal Horticultural Board.

BENEFICIAL INSECTS.

Owing to Mr. D. T. Fullaway's absence during the month of June the work of breeding and distributing parasites of the fruit fly and horn fly was carried on by the assistant in the insectary. Mr. Fullaway kindly assisted in a general way as adviser, and the following parasites were reared and distributed during the month:

Bred—*Tetrastichus*, 24,510; *F. fullawayi*, 1,123; *D. tryoni*, 644; *African spalangia*, 4,000; 30,277. Other species, 5,000. Total bred, 35,277.

Liberated—*Tetrastichus*, 24,300; *D. fullawayi*, 1,162; *D. tryoni*, 646; *African spalangia*, 2,000; *Opius humilis*, 200; *Philippine spalangia*, 2,500; *Philippine pteromalid*, 1,100; *Hornfly, African*, 1,200; total liberated, 33,108.

In producing these parasites there were used a total of 44,200 pupae.

HILO INSPECTION.

Owing to the usual leave granted Brother M. Newell at this season of the year I sent Mr. D. B. Kuhns to Hilo to supervise the work there during Brother Newell's absence. Ten steamers arrived at the port of Hilo of which five brought vegetable matter consisting of 184 lots and 2904 packages. The T. K. K. steamer Keiyo Maru arrived direct from Japan with 3000 bags of rice and 346 bags of beans, all of which was passed as free from pests.

INTER-ISLAND INSPECTION.

During the month of June 64 steamers plying between Honolulu and the ports of the other Islands were attended to. The following shipments were passed: Plants, 108 packages; taro, 458 bags; vegetables, 57 packages; fruits, 3 packages; total inspected, 626.

The following packages were refused shipment on account of infestation or of having soil attached to the plants: Plants, 15 packages; fruit, 18 packages; total refused, 23 packages.

Respectfully submitted,

E. M. EHRHORN,
Superintendent of Entomology.

DIVISION OF FORESTRY.

Honolulu, July 13, 1915.

Board of Commissioners of Agriculture and Forestry.

Gentlemen:—I respectfully submit the following routine report for the Division of Forestry for the month of June, 1915:

MOLOKAI TRIP.

During the first week of June I was on Molokai finishing up the work of which I wrote in my May routine report.

FENCE WIRE.

On June 7, bids for furnishing 520 coils of No. 6 gauge American Special extra heavy coated galvanized fence wire were opened, and were as follows:

Theo. H. Davies & Co., Ltd.	\$3.52 per coil.
Fred L. Waldron, Ltd.	3.74 “
Inter-Island Steam Nav. Co., Ltd.	3.75 “

The lowest bid was accepted and contract and bond calling for delivery of 150 coils by June 24 and the balance by August 10, 1915, and involving a total payment of \$1830.40, to come out of the appropriation for the period ending June 30, 1915, were executed and approved.

GRASS CUTTING.

An application to cut grass in the reserve on Tantalus was refused on the same grounds that similar requests in the past were not granted—the objection of residents of Tantalus to the damage done to the roads by the grass wagons and the need of the grass for fire protection.

USE OF LAND.

An application was received for the use of about 40 acres of land in a kipuka within the South Kona reserve, Hawaii. In a special report on this application I have recommended that it be not granted on the grounds that it would be inconsistent with our forest reserve policy.

MANUSCRIPT FOR BULLETIN.

Consulting Botanist Joseph F. Rock has revised and submitted his manuscript on “The Forests of the Hawaiian Islands,” being a description of the forest covering of each of the eight principal

islands. As soon as possible I plan to go over this carefully and recommend to the Board as to its publication as a bulletin of this Division.

During the last half of the month, to my regret, I was obliged to be absent from the office on account of ill health.

Respectfully submitted,

C. S. JUDD,
Superintendent of Forestry.

REPORT OF FOREST NURSERYMAN.

Honolulu, July 14, 1915.

C. S. Judd, Superintendent of Forestry.

Dear Sir:—I herewith submit a report of the principal work done during the month of June:

NURSERY.

Distribution of Plants.

	In seed boxes.	In boxes trans- planted.	Pot grown.	Total.
Sold	150	236	386	
Gratis	3000	1800	1082	5882
	<hr/> 3000	<hr/> 1950	<hr/> 1318	<hr/> 6268

GOVERNMENT REALIZATIONS.

Collections.

Collections on account of plants sold amounted to	\$ 7.45
Rent of building, Nursery grounds	35.00
	<hr/> \$42.45

PRESERVATION FOREST RESERVES.

Rent of premises at Half-Way House, Tantalus, for April, May and June, 1915	\$30.00
For use of two acres of land, Kalawahine in Pauoa val- ley, for April, May and June	5.00
For use of land and gathering ti leaf on Kalawahine, Pauoa valley, for April, May and June	12.50
	<hr/> \$47.50

PLANTATION COMPANIES AND OTHER CORPORATIONS.

Under this heading 9000 trees in seed boxes and 300 in transplant boxes, have been distributed during the month. An order for 50,000 seedlings has been received from one plantation. These will be delivered within the next six weeks.

MAKIKI STATION.

The work at this station has been principally routine; namely, mixing and sterilizing soil, transplanting and potting plants, etc.

HONOLULU WATERSHED PLANTING.

During the month 864 kukui trees were planted out. Other work done consisted of hoeing and clearing away grass and weeds from the young trees recently planted.

Very respectfully,

DAVID HAUGHS,
Forest Nurseryman.

DIVISION OF HYDROGRAPHY.

Honolulu, July 9, 1915.

Board of Commissioners of Agriculture and Forestry.

Gentlemen:—The following report of operations of the Division of Hydrography during June, 1915, is submitted:

WEATHER CONDITIONS.

With the exception of the Hilo district on Hawaii and the Ewa district of Oahu, the rainfall was only slightly below normal throughout the islands. Both Hilo on Hawaii and Ewa on Oahu districts have suffered from drought, while practically all of Maui and Kauai have had abundant light showers throughout the month. Waianae on Oahu suffered from drought during the early part of the month, but this was broken the last of the month. Heavy rains fell on East Maui and over the most of Hawaii during the week ending June 26.

The rainfall of the upper Nuuanu valley has kept Reservoirs No. 1, 2 and 3 full, and No. 4 has held its own with a depth of about thirty feet.

LEGAL WORK.

The Superintendent assisted the Attorney-General's office during the entire month by collecting, computing and segregating hydrometric and level data relative to the Waikoloa water case being tried at Kamuela, Waimea, Hawaii.

SCHOFIELD BARRACKS WATER SUPPLY.

In compliance with a request from the commanding officer, Hawaiian Department, U. S. Army, a report with recommendations relative to the present and future water supply of Schofield Barracks was completed and has been forwarded.

KAUAI.

A large amount of small repair and maintenance work was completed; old staff gages were replaced by new enameled gage faces; and a new measurement station was established on the Kaholalele ditch which diverts water from the North Wailua river, just above Kaholalele falls. This ditch now loses about half its flow by seepage in the first half mile.

Sixty-two stream and ditch measurements were made, and five rainfall stations were visited.

OAHU.

A large amount of maintenance work was done and all stations on the island were visited. Thirty-one stream and ditch measurements were made, and four rainfall stations were visited.

The discharge from the north portal of the Waiahole tunnel was measured and found to total twenty-four million gallons per day—a decrease of about four million gallons in about a month.

MAUI.

All continuous record, or clock register stations, were visited and twenty-two stream measurements were made. Two rainfall measurement stations were visited.

HAWAII

Eight stream and ditch measurements were made on the Waikoloa stream and the Lyons ditch; a large amount of ditch levels were run; and a large amount of hydraulic computing work was completed for the Attorney-General's department, at Waimea.

JULY PLANS.

Kauai.—Most of the month will be spent in collecting and preparing Kauai stream and ditch discharge and rainfall data for the fiscal year ending June 30, 1915.

Three Gurley water stage registers have been ordered for installation, probably in August and September, on the three main branches of the Waimea river. The registers, when established, will furnish records of the entire flow of the upper Waimea drainage at points above all ditch intakes. A ditch measurement station will be re-established on the Kekaha ditch during the month of July.

Oahu.—Only routine field and maintenance work will be done, as the entire force on the island will be occupied in preparing data for the report of the past fiscal year.. A field trip to all windward Oahu stations will be made, and such low water measurements will be made as are needed to bring rating curves up to date.

Maui.—Only routine work will be done. All private ditch discharge and rainfall records for the past year which are available will be collected.

Hawaii.—No operations on this island are planned.

Very respectfully,

G. K. LARRISON,
Superintendent of Hydrography.

FOREST EXHIBIT FOR CALIFORNIA.

Part of the government's exhibit for the Panama-California Exposition at San Diego left Washington recently. This portion has to do with the national forests of New Mexico, and will be shown in the New Mexico building, the exhibit having been prepared in coöperation with the state board of exposition commissioners of that state. The material also shows specimens of the principal timber trees of New Mexico and their uses.

Other exposition material was to leave soon for San Francisco, where it will form a part of the Panama-Pacific Exposition. Part of this is being prepared through coöperation between the forest service and the United States civil service commission. The commission passes on the qualifications of all candidates for positions in the forest service, testing the fitness of those who wish to become forest officers through outdoor examinations in riding, surveying, timber estimating, and similar matters, as well as by more conventional methods. Its exhibit will illustrate the duties of these officers.

Coöperation also exists, in the preparation of exhibit material, between the forest service and the bureau of education. This shows how forest subjects are used in the public schools, in con-

nection with nature study, commercial geography, agriculture, and the like. One of the exhibits is a display made by the normal school pupils of the District of Columbia, in which a number of those who are studying for teachers' positions entered a prize contest on tree study. Each of the contestants prepared a separate exhibit showing the life history and the products of individual trees, such as white pine, hickory, or sugar maple.

POTATO SPRAYING.

Following are the conclusions of bulletin No. 397 of the New York agricultural experiment station, Geneva, N. Y., on "Lime-sulphur vs. Bordeaux Mixture as a Spray for Potatoes," the author being M. T. Munn:

"The results of the past two seasons' work are entirely confirmatory of the experiments of the previous two seasons. The relative efficiency of the two sprays, as far as their effect upon potato foliage and tuber yield is concerned, can be definitely stated. Bordeaux mixture, because of its beneficial influence upon the leaves, materially lengthens the productive life of the potato plants resulting in a marked increase in yield of tubers. The lime-sulphur solution, because of its injurious effect in dwarfing the plants and aggravating tip-burn, causes the plants to die ten days to two weeks earlier than those in unsprayed rows and materially decreases the yield of tubers.

"The effect of lime-sulphur on late blight and rot (*Phytophthora infestans*) is still uncertain, since it appeared in the experimental field in but one of four seasons' tests at which time it apparently failed to check the disease.

"It seems certain, then, that lime-sulphur should not be used as a potato spray, while on the other hand it pays to spray potatoes every season with bordeaux mixture, because the bordeaux mixture prevents tip-burn, prolongs the life of the plants, and increases the yield in dry seasons, while in wet seasons the protection against late blight, with its resulting tuber rot, may result in marked gains. Potato growers should not omit the spraying of potatoes with bordeaux mixture."

AN AMERICAN SUGAR-PLUM.

\$200,000,000 was the size of this sugar-plum in 1909, according to reliable statistics, says Harry R. Lewis, author of "Productive Poultry Husbandry," published by J. B. Lippincott Company. All that tidy sum for what? Just for hen's eggs. (The sale of chickens not included.) It was divided up among a good many Americans, yet the bulk of it went to people living in Iowa, Missouri, Illinois, Ohio, New York, Indiana, Pennsylvania, Kansas, Michigan and Texas. It certainly must have gone a good way toward meeting the high cost of living for them. A good

many other Americans would have been glad to share in that plum—and by the way, why don't they? Read Professor Lewis for the "how to do it." He is poultry husbandryman in the New Jersey agricultural experiment station, and knows all there is to know about it.

"I KNOW A BANK WHEREON THE WILD THYME GROWS."

There is a woman who so loved the flower descriptions in Shakespeare's plays and poems that she devoted a sunny garden space to all the dear, fragrant blossoms celebrated in his immortal verse. Lovely indeed was that garden, and redolent of poesy as well as flower scents. Yet who shall say that our own fair land, with its wild cyclamens, Mariposa lilies, wild forget-me-nots, scarlet sage, and hundreds of other rare blossoms, could not outvie all the blossoms that Shakespeare knew? Those who walk abroad under the happy guidance of George Lincoln Walton's "Flower Finder," (Lippincott) need no Latin and less Greek to identify every flower that blooms by stream, hillside or wayside, and find in their friendly recognition all the tender charm expressed in Shakespeare's poetry.

SWEET POTATO AND COWPEA VINES AS FEED FOR STOCK.

Some investigations have been made in Japan, and reported on in the Journal of the Department of Agriculture of Victoria, which seem to show that the dried vine of the sweet potato affords an excellent fodder for live-stock. In discussing the work it is said that the aggregate weight of stem and leaves per hectare is 13 tons. The green vine is considered rather a watery food resembling in composition the leaves of the sugar beet, containing tannin, however, instead of oxalic acid. Although this green stuff may with caution be fed as such, it is the dried material which has proved more satisfactory. In the experiments, the stems and leaves were exposed to the sun for a few days, but at a temperature much lower than occurs in the tropics, and eventually an air-dried herb was obtained with a fine aroma, which was gladly eaten by stock. The green vines and leaves of the sweet potato were also shown to serve as useful material for the manufacture of ensilage. Animals fed on this material thrived satisfactorily. Although it is observed that there was a loss in nutritive material during its manufacture into ensilage, this amounted only to about 6 per cent.

In another publication (Tropical Life for April 1915) attention is given to the value of cowpea vine as a cattle feed. After referring to the great value of this material as a nitrogenous fertilizer and weed destroyer, it is stated that cows getting cow-

pea hay averaged 1.3 pounds more milk daily than those which were fed on wheat bran. For pig raising it is said that cowpea vines are invaluable. Experiments made in New Zealand with three 50 pound pigs in a field pasture of cowpeas, given corn additional, and the second lot of three fed on corn only, in a trial lasting forty-two days, showed that the pigs in the cowpea field gained nearly three times as much as those fed on corn alone. In a trial made with this fodder on horses, it was proved that cowpea hay combined with corn and cob meal made a very satisfactory work ration. Cowpea hay with a reasonable quantity of corn is regarded as a good substitute for bran and oats.—Agricultural News.

WORLD CHAMPION AYRSHIRE.

Henderson's Dairy Gem 35175, bred by Hill Top Farm, Wheeling, W. Va., owned by Henderson's Dairy Farm, Hudson, O., has completed her year's test for advanced registry with the official record as a senior two-year-old of 17,974 lbs. of milk, 738.32 lbs. of fat, 4.11% fat, making her the senior Ayrshire two-year-old champion of the world.

This record is an interesting study in breeding for a purpose, whether it was done by accident or design, I cannot say, but it illustrates what we have always claimed, that when Ayrshires that had proved themselves producers were coupled we might expect phenomenal records. The sire of this heifer is Rena's Champion, a young bull with two advanced registry daughters already to his credit; his sire is Finlayston with 39 advanced registry daughters to his credit. The dam of Rena's Champion is Rena Ross with an official record of 15,072 lbs. of milk, 462.86 lbs. of fat, 4.26% fat. The dam of Henderson's Dairy Gem is Dairy Gem, with a three-year-old record of 14,425 lbs. of milk, 533.55 lbs. of fat, 3.7% fat. She was sired by Howie's Dairy King, with 20 daughters to his credit, out of Drummond's Gem, with an official record of 10,841 lbs. of milk 388.60 fat, 3.58% fat.

The above illustrates the value of advanced registry work with any breed of dairy cattle, and should be an incentive to Ayrshire breeders to breed by method not by chance.

C. M. WINSLOW,

Secretary Ayrshire Breeders' Association.

Brandon, Vermont.

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G. K. LARRISON,
Superintendent of Hydrography.